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ABSTRACT

Oregon created a model for measuring secondary vocational education effectiveness and developed and field tested instruments to carry out the design. The five key features of this model were student and societal needs, program components, program outcomes (occupational, educational, ancillary, and societal), multiple perspectives for judging effectiveness (students, program completers, staff, parents, employers, and advisory committees), and multiple contexts in which vocational education operates (individual vocational education classes, and program, state, and multi-state efforts). Assessment instruments based on the key outcomes of vocational education were developed and pilot tested for vocational and general education students, employers, vocational education staff and administrators, parents, and vocational education advisory committee members. Through a study, the instruments were then administered to a sample consisting of 12 schools in Oregon. Some of the results included: (1) students entered a vocational education program primarily because of an interest in the area; (2) as compared to nonvocational students, vocational students rated themselves as better prepared in work-related skills; (3) parents and vocational education teachers and coordinators rated students high in vocational and technical skills needed for entry-level jobs; (4) parents were generally satisfied with their child's vocational program; and (5) teachers and students rated the quality of instruction high. Some special analyses are reviewed, and recommendations for vocational education improvements are suggested. (YLB)

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EXAMINING THE IMPACT OF HIGH SCHOOL VOCATIONAL EDUCATION

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EXAMINING THE IMPACT OF HIGH SCHOOL VOCATIONAL EDUCATION

> "Determining the effects of participation in vocational education is a complex and difficult task. Unlike medicine, in which true experiments with random assignment to treatment and control groups are possible, vocational education must rely on less rigorous methods in which cause and effect cannot be absolutely determined." (Taylor, 1980, p. 257)

Vocational education programs are presently facing perhaps the biggest challenge in their history. Vocational education is no longer viewed as one of the most critical elements of secondary education at either the local, state or federal level. Instead of being faced with the question of what new vocational programs to add, we are more often presented with the choice of what existing programs, if any, should survive.

If vocational education is to survive and prosper, vocational educators will need to present state and federal legislators, the public and others with convincing evidence about the impact of vocational education and the strengths and weaknesses existing in current programs. A comprehensive and valid evaluation data base does not exist for answering such questions. Defining the effectiveness of vocational education has been one of the biggest obstacles to conducting quality evaluation. Although numerous studies of secondary vocational education have occurred, no consensus exists as to the key outcomes that should be measured (Darcy, 1979, 1980).

Typically, the effectiveness of vocational education has been judged primarily by assessing the inputs, such as the amount of money spent or the delayed outcomes, such as the proportion of vocational education graduates employed in occupations related to the training they received, their salaries and the degree of satisfaction with their job and with their vocational preparation (Mertens, 1980). Although this information is important, there are some major problems with this approach. For example, in periods of high unemployment it may be difficult for graduates to get jobs in areas related to their training, their interests may change or they may elect to pursue additional education and training. Another problem with assessing vocational education effectiveness primarily by surveying graduates is that the data are often too general to use for program improvement. Likewise, surveying only graduates ignores the reactions of students who decide to drop out of their vocational program or out of school entirely.

Others (Campbell, Gardner and Seitz, 1982; and Davis, 1981) have used National Longitudinal Survey data to determine the effects of participation in secondary vocational education on labor market experiences. This information is also important but does not provide an assessment of the vocational programs in which they participated.

A New Direction

Recognizing that legislators, the American public and those of us in education need accurate information on the effects of secondary vocational education, the executive committee of the National Research Coordinating Unit (RCU) Directors' Association formed a committee of six state RCU directors to plan a multi-state, multi-year project.[1] This

effort was intended to collect, summarize and present a comprehensive view of the outcomes of vocational education. Oregon took the lead by creating a model for measuring secondary vocational education effectiveness and developing and field testing instruments to carry out the design. Other RCU state directors will have the chance to use the same instruments in their states and to synthesize the findings.

Objectives of the Oregon Study

The Oregon work was designed to provide staff at the school district and state department of education level with an awareness of the outcomes of secondary education and of the perceived strengths and weaknesses of vocational education programs. To assist in this effort, the Oregon Department of Education contracted with the Northwest Regional Educational Laboratory (NWREL) to conduct the background research, develop criteria for judging vocational education effectiveness, construct a model and instruments (Owens, 1981), and collect, analyze and report the findings (Owens, 1982).

The Model

In developing this model for assessing effectiveness, we avoided an *a priori* definition of effectiveness. Instead, we reviewed much of the prior research on vocational education effectiveness and from that review extracted a list of outcomes and quality program indicators. A project steering committee composed of vocational educators, administrators and employers reviewed the lists and provided us with a

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1 This committee consisted of the RCU directors from Arizona, Florida, Illinois, Ohio, Oregon and South Carolina.

rating of importance for each outcome and quality program indicator. A similar process was used to obtain ratings from vocational education RCU directors in the other five collaborating states. The rank orderings of these two groups on the outcomes guided us in understanding vocational education effectiveness. These are displayed in Tables 1 and 2.

Chart 1 represents the five key features of this model for evaluation of vocational education effectiveness: (1) student and societal needs, (2) program components, (3) outcomes, (4) multiple perspectives for judging effectiveness and (5) multiple contexts in which vocational education operates.

One can begin a view of the model by describing the key needs that lead to vocational education: (1) an individual's need for skills necessary for obtaining an entry level job or postsecondary education in an occupational area, and (2) society's need for an available qualified work force to meet labor market demands. An analysis of these needs should lead to the design of appropriate vocational education programs.

The components of a program which we consider especially important to describe and assess include: the program's goals and objectives; the curriculum; instructor qualifications and inservice; facilities and equipment; student support services; funding; vocationally-related youth organizations; use of employer and community resources; and the role of advisory committees.

The outcomes of a vocational education program can be clasified under four headings--occupational, educational, ancillary and societal.

This model uses multiple perspectives to describe and judge vocational education effectiveness. It is not enough to ask students how they like their programs. Other stakeholders whose perceptions are important to assess include program completers, staff, parents, employers and advisory committees. The need for assessing these multiple perspectives has led to development of the evaluation instruments described in this report.

TABLE 1
TOP PRIORITY VOCATIONAL EDUCATION OUTCOMES AS INDICATED BY
THE STEERING COMMITTEE AND RCU DIRECTORS

	Ratings* by Steering Comm.	RCU Directors
Possession of occupational skills needed for job entry level	4.7	5.0
Ability to apply basic literacy skills to work tasks	4.7	4.7
Ability to apply basic occupational skills to work tasks	4.5	4.8
Ability to meet the local labor market demand	4.7	4.3
Possession of interpersonal skills for relating to others	4.7	3.5
Pride in producing quality work	4.5	4.5
Possession of good work habits	4.3	4.5
Development of transferable occupational skills	4.5	4.3

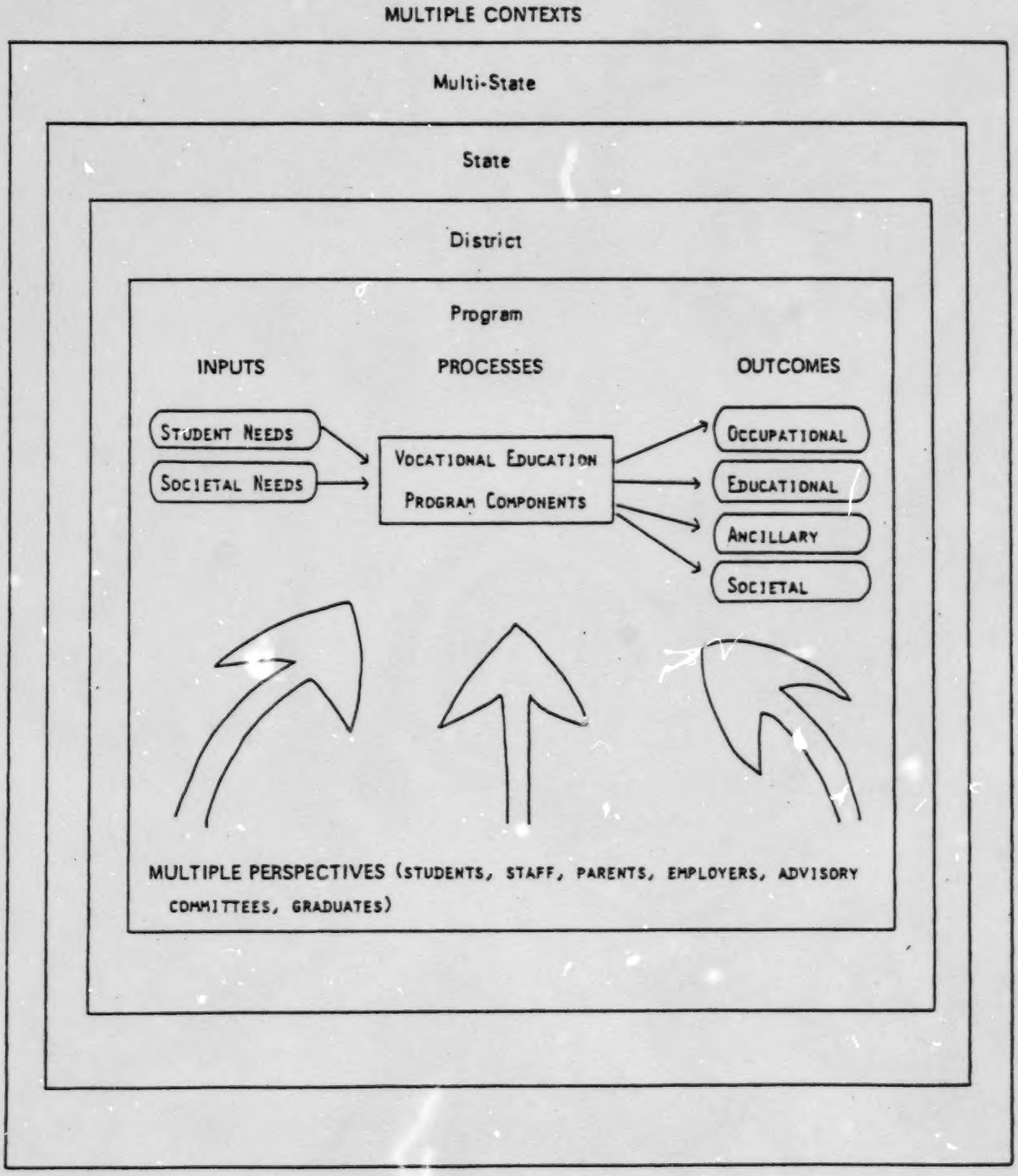
*Based on a five point rating scale

TABLE 2
TOP PRIORITY OF QUALITY PROGRAM INDICATORS

	Ratings* by Steering Committee	RCU Directors
Availability of instructional staff with adequate training and experience in the vocational area	4.7	4.7
Improved linkage with business, industry and labor	4.5	4.7
Placement of completers in employment related to their area of vocational training	4.7	4.3
Availability of quality cooperation work-experience opportunities for those desiring them	4.5	4.5
Availability of realistic instructional experiences	4.3	5.0

*Based on a five point rating scale

CHART 1
Model of Secondary Vocational Education Effectiveness



This model also recognizes the existence of multiple contexts for vocational education, ranging from an individual vocational education class to a multi-state vocational education effort. Acknowledging these distinct contexts helps us recognize that the evaluation questions raised at each level are often of only limited interest to higher or lower levels. It is usually not necessary to aggregate data from every single local school program to derive state or national information. When state or multi-state information is needed, selection of a sample of schools or districts is often adequate.

Existing systems

A tendency for researchers developing new models is to overlook existing evaluation systems that are already in place in at least some districts in the state. A review of existing documents in Oregon and discussion with state, regional and district vocational education staff have revealed various evaluation systems being used. Some of these systems are mandated by federal or state laws, such as Minimum Standards and Vocational Program Evaluations, which apply to all districts. Other evaluations are mandated but limited to special federally funded programs for economically disadvantaged and handicapped students.

Research Methods

NWREL researchers reviewed the literature and existing instruments for assessing the effectiveness of high school vocational education programs. This review included a study of state documents furnished by the participating RCU directors, documents supplied by the National Center for Research on Vocational Education, and a computerized

literature search. A draft bibliography was prepared that covered the major documents we found helpful. This bibliography was reviewed by the Advisory Committee and led to a revised 49 item bibliography.

After reviewing the documents from the literature search and examining current practice in vocational education evaluation in Oregon and several of the participating states, a list of the most commonly used outcomes of vocational education was prepared. This list was reviewed by the executive committee of the national RCU directors association and modified based on feedback from this group and other reviewers. The top priority outcomes identified by the reviewers served as the guide for developing the evaluation model and instruments.

Instruments

Assessment instruments based on the key outcomes of vocational education were developed and pilot tested for (1) currently enrolled high school vocational education students and general education students, (2) employers, (3) vocational education staff and administrators, (4) parents of twelfth grade vocational education students, and (5) vocational education advisory committee members.

Four instruments were used to assess vocational and nonvocational education students at both the tenth and twelfth grade level. The design allowed an analysis of the effects of two years of participation in vocational education in comparison to students not electing to take vocational education and in comparison to tenth grade vocational enrollees.

The four student instruments contain some items adopted from instruments in other states and a reading and mathematics subtest from

the national longitudinal study, "High School and Beyond," sponsored by the National Center for Educational Statistics (Epstein, 1980). Permission was obtained from Educational Testing Service for use of the reading and mathematics measures they developed for "High School and Beyond."

The survey questionnaires were constructed so that some common items would appear as surveys for two or more audiences while other items were designed to be unique to a single audience. The rating of many items related to program characteristics and to student outcomes appeared on all five forms in order to allow comparisons across groups.

The pilot test was conducted in a suburban and a rural school district in Oregon. These districts agreed to survey one or two classes of students for each of the four student versions, vocational education instructional staff and administrators, two advisory committees, approximately 20 employers and the parents of one class of twelfth grade vocational education students. Survey and test administrators as well as respondents were encouraged to suggest ways of improving the items and/or instruments.

Data from the pilot test were coded and analyzed using the Statistical Package for Social Sciences (SPSS). Results of the analysis were used in conjunction with administrative and respondent comments to make final revisions. The revised instruments were again reviewed by the Steering Committee, modified and then printed.

Design

The design of this study called for administering instruments to in-school vocational education and nonvocational education students,

vocational instructors and coordinators, parents of twelfth grade vocational education students, and to vocational education advisory committees in participating schools.

The study sample consisted of 12 schools, composed of two large schools (over 1,200 students); six medium size (500-1,200 students); and four smaller schools (under 500 students). These numbers reflect the approximate proportion of various sized districts in the state as a whole. Schools were also selected to give a geographic balance across the state. To be eligible, schools had to: (1) have operated one or more state-approved vocational education programs for at least two years, and (2) express willingness to collect the data in late April or early May of 1982.

All twelfth grade students enrolled in state-approved vocational education programs in the selected schools were surveyed. A sample of 50 nonvocational education twelfth grade students were surveyed in English and social science classes. At the tenth grade level, a sample of approximately 50 students planning to take vocational education in eleventh or twelfth grade and 50 students not planning to take vocational education were used. Whenever possible, entire tenth grade English or social studies classes were surveyed. The primary purpose of assessing tenth grade students was to determine the extent to which students planning to take vocational education in eleventh and twelfth grade may be different from those not planning to take vocational education (general or academic students).

Students completed the surveys in a group setting so that questions could be answered for all students at once, and so that timed achievement

tests could be administered according to the standardized procedure. Survey booklets were distributed so that a random half of the students received the reading achievement test and the other half the mathematics achievement test.

The contact persons in the schools received orientation and training from the project director in systematic procedures for testing, collecting and handling the data. A detachable cover sheet attached to the twelfth grade vocational education student form was used to gather their addresses. The parents' surveys together with an explanatory cover letter and postage-paid return envelope were mailed directly to all parents by the NWREL staff. The remaining student, staff, coordinator and advisory committee surveys were collected and returned to NWREL by the individual school contact persons.

Number and Types of Participants

Useable student survey data were collected from 1,609 high school students throughout Oregon. Because our primary interest was in the impact of vocational education on students, the design called for gathering data on all available twelfth grade vocational students and on a sample of students in three comparison groups. There were 615 twelfth grade vocational students, 307 twelfth grade nonvocational students, 355 tenth grade students who planned to enter vocational education the following year and 332 tenth grade students who did not plan to enter vocational education. The characteristics of these students are described in the student findings section of this report.

The vocational administrator survey was completed and returned by 13 administrators in nine schools while 36 teachers completed the teacher survey. Advisory Committee surveys were returned by 56 members in seven schools. One hundred forty parents of twelfth grade vocational education students in 11 schools throughout Oregon completed and returned the parent survey.

Employer data had been collected recently in Oregon by another contractor and thus an employer survey was not a part of this contract. Instead, the existing employer data were incorporated into the discussion of the findings and a more comprehensive statewide employer survey planned for 1983.

Summary of Findings

The major findings of the Oregon study are highlighted below.

- Students enter a vocational education program primarily because they have an interest in the area and to a lesser extent because they want to learn specific skills.
- Students who entered vocational education to learn specific job skills or who had an interest in the area were more likely to report plans to get a job or take further training in the area than those who entered because their friends were in the program or because of parental or other advice.
- In contrast to the stereotype that some adults have of young people's view of the work world, very few teenagers viewed their present job as a place where people "goof off." Most of them saw their job while in high school as encouraging good work habits.
- Twelfth grade vocational students, in comparison with ratings of nonvocational students, rated themselves as better prepared in (1) understanding the importance of being productive on the job, (2) knowing how to look for and obtain a job, (3) being on time for work, (4) completing tasks, and (5) preparing a job resume.

- On ratings of self-concept, there were no significant differences between vocational and nonvocational students.

- Vocational education students rated their overall satisfaction with their vocational courses significantly higher than they did for their nonvocational courses.

- Vocational students in twelfth grade scored lower on applied reading and math tests than did nonvocational students. At the tenth grade level there were no significant differences between those planning to enter or not enter vocational education.

- Slightly over half of the twelfth grade vocational students plan to take postsecondary training in a related area and approximately 60 percent plan to get a job in an area related to their high school vocational training.

- Students were rated high in the vocational and technical skills needed for entry level jobs by parents and by vocational education teachers and coordinators.

- Advisory committee members as well as vocational teachers and coordinators rated students high in understanding the importance of being productive on the job. Students also rated themselves high in this area.

- Willingness to learn new things was rated particularly high by students, advisory committee members and vocational education teachers.

- Parents were asked how satisfied they were with certain aspects of their child's vocational program. About three-quarters of the parents were satisfied or very satisfied that their daughter or son has received the necessary occupational skills to get an entry-level job and 16 percent were not satisfied.

- Approximately one quarter or more of the parents were not satisfied with the help their child received in finding a job, with vocational counseling, and with current occupational information available at school.

- As a result of being enrolled in a vocational education program, parents reported noticing an improvement in certain areas of their daughter's or son's performance. The greatest improvement reported was in doing work that meets acceptable standards and in being willing to learn new things.

- Ninety-one percent of the parents felt that a student completing a high school vocational education program has a better chance of getting a job than students without such training. Only four percent disagreed with that opinion.

- Five percent of the parents reported hiring a handicapped child in vocational education. Three percent said their child was receiving additional services and almost all of them were satisfied with the services being provided.

- Parents were asked how important they felt it is that high schools keep vocational education programs when districts are faced with the need for budget cuts. Eighty-three percent felt vocational education programs should be of high priority, 16 percent of medium priority and only one percent said low priority.

- Effective collaboration between the program and local business and industry was rated especially high by the advisory committees and the vocational coordinators but lower by the vocational teachers.

- Quality of instruction and realistic instructional experiences were rated high by both the vocational education teachers and the coordinators. Students also rated the quality of instruction high.

- The function of vocational education in increasing the attractiveness of the community for economic development was rated relatively low by vocational teachers, coordinators and advisory committee members.

- Vocational counseling and job placement assistance were rated relatively low by parents, students, vocational teachers and vocational coordinators.

- Although it is intended that teachers be involved in their district's annual plan for vocational education, over half of the staff reported little or no participation.

- Teachers rely heavily on talking with employers and on input from their advisory committee in helping to assure that their vocational program is meeting current and future labor market needs.

Special Analyses

In addition to the overall findings previously summarized, some special analyses were conducted to address questions raised by the Steering Committee and the Advisory Committee. Reasons students listed for entering vocational education were correlated with other questions on the student survey. Students entering vocational education because they

want to learn a specific job skill or because they have an interest in the vocational area were more likely to plan to get a job or further training in an area related to their high school vocational training than were students who enrolled because their friends were in the program, because they didn't like the general school courses, or because parents or relatives advised them to enroll in vocational education.

Students enrolled in vocational education for two years or more, in comparison with those enrolled for a shorter period of time, felt they were better prepared for an entry-level job, rated vocatonal education more highly, and were more likely to plan to enter further training or a job in an area related to their high school vocational training.

Twelfth grade vocational education students in Business and Office Occupations scored significantly higher than students in Distributive Education, Technical or Trade and Industry on the reading test. No significant differences across occupational areas were found in mathematics performance.

In addition to finding out why some students selected to enter a vocational education program, we were also interested in learning why other tenth and twelfth grade students had decided not to take vocational education in high school. The two most frequent reasons given by students at both grade levels were that it was necessary for them to take other courses in order to reach their goals, and that they preferred other courses. Less than two percent of the students selected not to take vocational education because of its perceived lower status or because parents, teachers or relatives advised them not to enroll. Interestingly, six percent of the nonvocational students indicated that they planned to delay vocational training until after completing high school.

Recommendations

Vocational education coordinators listed some suggestions for improving vocational education. These included: adding computer, electronics and food services classes; increasing funding; upgrading equipment; improving job placement; developing better communication with employers and improving in-house coordination of cluster curriculum activities.

Suggestions given by teachers for improving vocational education included: providing opportunities for teachers to visit other trade schools and to attend workshops, having better, up-to-date equipment, and getting better support from the administrators.

Parents recommended improving the counseling and job placement activities, bringing in more people from the field to add their expertise, increasing community involvement in planning and monitoring programs and improving the public relations image of vocational education students and programs. Adding or expanding programs in the areas of computer science, food management, fiberglass trades, medical services, construction, social service occupations and diesel mechanics were also recommended.

The evidence from student tests and opinion data gathered in this study together with a recent Oregon employer survey suggest that vocational education programs need to give more attention to improving applied reading and mathematics skills. Such basic skills can be integrated with other vocational skills needed for successful performance on entry-level jobs and in postsecondary education.

The impact high school vocational education programs have in increasing a community's economic development appears questionable. For

those communities where this is an important concern, clarification needs to be given to the role that vocational education can play. Vocational staff, school administrators and advisory committees need to understand how vocational education can enhance economic development and then learn how to communicate this role clearly to the private sector and to the public.

As with studies in other states, this Oregon study found that career counseling and job placement help for program completers were two areas rated weak by most of the people surveyed. With declining budgets and increased workload on counselors and teachers, it may become important to consider alternative ways of delivering these services. These may be two areas where parents and people in the private sector could contribute time and talent as mentors to individual young people.

One of the areas of weakness noted by advisory committee is the absence of adequate program evaluation information and student achievement and placement data. Such information should be provided to them so that they can become more productive.

Reasons that students list for entering vocational education need to be examined more closely in the future. If they continue to be found to be good predictors of student success in vocational education, then educators may want to use them in selecting which students to admit into vocational education in cases where funding limitations prevent programs from accepting all students who apply.

The second area that researchers might look at more closely is the relationship between the number of hours students take vocational education and their success in such programs. This study used only the gross data on number of semesters of vocational education completed.

Future studies may want to determine a more accurate pattern of participation in vocational education using procedures developed by Campbell, Orth and Seitz (1981). Such information could be critical in making cost-effectiveness decisions regarding the variety and length of secondary vocational training programs to be offered.

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